

**USEFUL
WILD PLANTS
OF THE
UNITED STATES AND CANADA**

BY

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ILLUSTRATED BY PHOTOGRAPHS,
AND BY NUMEROUS LINE DRAWINGS
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INTRODUCTORY STATEMENT

ALL the familiar vegetables and fruits of our kitchen gardens, as well as the cereals of our fields, were once wild plants; or, to put it more accurately, they are the descendants, improved by cultivation and selection, of ancestors as untamed in their way as the primitive men and women who first learned the secret of their nutritiousness. Many of these-as, for example, the potato, Indian corn, certain sorts of beans and squashes, and the tomato-are of New World origin; and the purpose of this volume is to call attention to certain other useful plants, particularly those available as a source of human meat and drink, that are to-day growing wild in the woods, waters and open country of the United States. Though now largely neglected, many of these plants formed in past years an important element in the diet of the aborigines, who were vegetarians to a greater extent than is generally suspected, and whose patient investigation and ingenuity have opened the way to most that we know of the economic possibilities of our indigenous flora. White explorers, hunters and settlers have also, at

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times, made use of many of these plants to advantage, though with the settlement of the country a return to the more familiar fruits and products of civilization has naturally followed. Man's tendency to nurse a habit is nowhere more marked than in his stubborn indisposition to take up with new foods, if the first taste does not please, as frequently it does not; witness the slowness with which the tomato came into favor, and the Englishman's continued indifference to maize for human consumption.

Sometimes, however, the claims of necessity override taste, and there would seem to be a service in presenting in a succinct way the known facts about at least the more readily utilized of our wild plants. The data herein given, the writer owes in part to the published statements of travelers and investigators (to whom credit is given in the text), and in part to his own first hand observations, particularly in the West, where the Indian is not yet altogether out of his blanket, and where some practices still linger that antedate the white man's coming. The essential worth of the plants discussed having been proved by experience, it is hoped that to dwellers in rural districts, to campers and vacationists in the wild, as well as to nature students and naturalists generally, the work may be practically suggestive.

The reader is referred to the following standard

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works for complete scientific descriptions of the plants discussed: Gray's *Manual of Botany of the Northern United States* (east of the Rockies); Britton and Brown's *Illustrated Flora of the United States and Canada* (the same territory as covered by Gray); Small's *Flora of the Southeastern United States*; Watson's *Botany of the Geological Survey of California*; Coulter's *New Manual of Botany of the Central Rocky Mountains*; Wootton and Standley's *Flora of New Mexico*.

USEFUL WILD PLANTS

CHAPTER I

WILD PLANTS WITH EDIBLE TUBERS, BULBS OR ROOTS

Your greatest want is you want much of meat.

Why should you want? Behold the earth hath roots.

Timon of Athens.

THE plant life of the New World was always a subject of keen interest to the early explorers, whose narratives not only abound in quaint allusions to the new and curious products of Flora that came under their notice, but also record for many of our familiar plants uses that are a surprise to most modern readers. In that famous compilation of travelers' tales, published in England some three centuries ago under the title of "Purchas : His Pilgrimage," it is asserted of the tubers of a certain plant observed in New England that "boiled or sodden they are very good meate"; and elsewhere in Master Purchas's volumes there is note of the abun-

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dance of the same tubers, which were sometimes as many as "forty together on a string, some of them as big as hen's eggs."



GROUNDNUT
(Apium tuberosa)

This plant is readily identifiable as the Groundnut -*Apium tuberosa*, Moench., of the botanists-of frequent occurrence in marshy grounds and moist

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thickets throughout a large part of the United States and Canada from Ontario to Florida and westward to the Missouri River basin. It is a climbing perennial vine with milky juice and leaves composed of usually 5 to 7 leaflets. To the midsummer rambler it betrays its presence by the violet-like fragrance exhaled by bunchy racemes of odd, brownish-purple flowers of the type of the pea. Neither history nor tradition tells us what lucky Indian first chanced upon the pretty vine's prime secret, that store of roundish tubers borne upon underground stems, which made it so valuable to the red men that they eventually took to cultivating it about some of their villages. Do not let the name Groundnut cause you to confuse this plant with the one that yields the familiar peanut of city street stands, which is quite a different thing. The Groundnut is really no nut at all but a starchy tuber, which, when cooked, tastes somewhat like a white potato. Indeed, Dr. Asa Gray expressed the belief that had civilization started in the New World instead of the Old, this would have been the first esculent tuber to be developed and would have maintained its place in the same class with the potato.

Narratives of white travelers in our American wilderness bear abundant evidence to the Ground-

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nut's part in saving them from serious hunger. Being a vegetable, it made a grateful complement to the enforced meat diet of pioneers and explorers; and Major Long, whose share in making known the Rocky Mountain region to the world is commemorated in the name of one of our country's loftiest peaks, tells in his journal of his soldiers' finding the little tubers in quantities of a peck or more hoarded up in the brumal retreats of the field mice against the lean days of winter. They may be cooked either by boiling or by roasting.

Though the Groundnut has so far failed of securing a footing in the gardens of civilization, there is another tuber-bearing plant growing wild in the United States that has a recognized status in the world's common stock of vegetables. This is a species of Sunflower (*Helianthus tuberosus*, L.), the so-called Jerusalem Artichoke. It is indigenous in moist, alluvial ground from middle and eastern Canada southward to Georgia and west to the Mississippi Valley, attaining a height at times of 10 feet or more. The French explorers in the St. Lawrence region in the early seventeenth century saw the tubers in use by the Indians and found them so palatable when cooked, suggesting artichokes, that they sent specimens back to France.



JERUSALEM ARTICHOKE
(Helianthus tuberosus)

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There they caught the popular taste and under the name of *pommes de Canada, batatas de Canada or Canadiennes*, their cultivation spread. In Italy they were grown in the famous Farnese gardens and called *girasole articiocco*, that is, Sunflower artichoke. A perverted pronunciation of the Italian by the English (who became interested in the plant and were growing it extensively as early as 1621) accounts for the otherwise unaccountable association of Jerusalem with it. The tubers (borne at the tip of horizontal rootstocks) are in the wild plant but an inch or two in diameter, but in cultivation they may be much larger, as well as better flavored. They reach their maximum development in the autumn, when they may be taken up and stored in pits for winter use; or, since frost does not injure them, they may be left in the ground all winter, and dug in the spring. In spite of the Jerusalem Artichoke's popularity as a vegetable abroad, Americans have so far been indifferent to it, except as feed for cattle and hogs-another instance of the prophet's lack of honor in his own country.¹

1 There are about 40 species of wild sunflowers growing within the borders of the United States, and it is not always easy to identify some given species. The Artichoke Sunflower is a perennial with hairy, branching stems 6 to 12 feet tall, and rough, ovate leaves, taper pointed, toothed at the edges, 4 to 8 inches long and 1 1/2 to 3 inches wide, narrowing at the base to a rather long footstalk.

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Upon dry, elevated plains in and contiguous to the Missouri River basin ranging from Saskatchewan through Montana and the Dakotas southward to Texas, you may find, where the plough has not exterminated it, another famous wild food plant—the Indian Bread-root of the American pioneers, known to them also as Prairie Turnip and Prairie Potato, and to the French Canadians as *pomme de prairie* and *pomme blanche*. Botanically it is *Psoralea esculenta*, Pursh, and its smaller cousin *P. hypogaea*, Nutt. It is a rather low, rough-hairy herb, resinous-dotted, with long-stalked leaves divided into five fingers, and bearing dense spikes of small bluish flowers like pea blossoms in shape. The tuberous root, a couple of inches in length, resembles a miniature sweet potato. Its nutritious properties were well known to Indians and such whites of other days as had any respect for the aboriginal dietary; and Indian women found a regular sale for it among the caravans of white traders, trappers and emigrants that traveled the far western plains in pre-railroad

Flowers yellow, both disk and rays, the latter numbering 12 to 20, and 1 to 1 1/2 inches long. There is another species, *H. giganteus*, L., one form of which growing in moist ground in western Canada has thickened, tuber-like roots which are similarly edible. These are the “Indian potato” of the Assiniboine Indians. Mr. W. N. Clute, in “The American Botanist,” February, 1918, noted that the prairie species, *Helianthus laetiflorus*, Pers., also bears tubers, which are little inferior to those of *H. tuberosus*.

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times. The fresh tubers, dug in late summer, may be eaten raw with a dressing of oil, vinegar and



INDIAN BREAD-ROOT
(Psoralea esculenta)

salt, or they may be boiled or roasted. The Indians (who were habitual preservers of vegetable foods

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for winter use) were accustomed to save a portion of the Bread-root harvest, first slicing the tubers and then drying them in the sun or over a slow fire. The dried article was ground between stones and added to stews or soups, or mixed with water and baked in the form of cakes. The heart of the tuber is white and granular, and, according to an analysis quoted by Dr. Havard,² contains 70% starch, 9% nitrogenous matter and 5% sugar. Some attempts have been made to introduce it into cultivation as a rival of the potato, but the latter is so well entrenched in the popular regard that nothing has come of the effort. As a resource for those who are cut off from a potato supply, however, this free offering of Nature should be better known. John Colter, one of Lewis and Clarke's men, escaping from some Blackfeet who were intent upon killing him, lived for a week entirely upon these Bread-root tubers, which he gathered as he made his painful way, afoot, wounded, and absolutely naked, back to the settlements of the whites.

There are, by the way, two wild species of true potatoes indigenous to the mountains of New Mexico and Arizona—*Solanum tuberosum boreale*, Gray, and

2 "Food Plants of the North American Indians," Bulletin Torrey Botanical Club, Vol. 22, No. 3.

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S. Jamesii, Torr. The tubers are about the size of grapes, are quite edible when cooked and long ago attracted the attention of the Navajo and other Indians, who use them. And curiously in contrast to this the sweet potato of cultivation has a wild cousin in the United States (*Ipomoea pandurata*, Meyer) with a huge, tuberous root weighing sometimes 20 pounds, popularly called "man-of-the-earth." It is found in dry ground throughout the eastern United States, a trailing or slightly climbing vine with flowers like a morning glory. So obvious a root could hardly have escaped the Indian quest for vegetables, and as a matter of fact it was eaten to some extent after long roasting.

There is a plant family—the *Umbelliferae*—that has given to our gardens carrots, parsnips, celery and parsley. It includes also a number of wild members with food value, occurring principally in the Rocky Mountain region westward to the Pacific. Among these the genus *Peucedanum*, represented in western North America by over 50 species, is noteworthy because of the edible tuberous roots of several species. Of these the following may be noted, adopting Dr. Havard's enumeration in his paper above, quoted : *P. Canbyi*, C. and R. (the chuklusa of the Spokane Indians); *P. eurycarpum*,

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C. and R. (the skelaps of the Spokanes) ; *P. Geyeri*, Wats. ; *P. ambiguum*, T. and G., *P. coul*, Wats. (the cow-as of the Indians). The tubers may be consumed raw and in that state have a celery flavor. The most usual method of use among the Indians, however, was to remove the rind, dry the inside portion, and pulverise it. The flour would then be mixed with water, flattened into cakes and dried in the sun or baked. These cakes, according to Palmer,³ were customarily about half an inch thick but a yard long by a foot wide, with a hole in the middle, by which they could be tied to the saddle of the traveler. The taste of such cakes is rather like stale biscuits. On



BISCUIT-ROOT
(*Peucedanum Sp.*)

³ Edward Palmer, "Food Products of the North American Indians?" Ann. Rept. U. S. Dept. Agriculture,



BISCUIT-ROOT
(Peucedanum ambiguum)

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this account, the Peucadanums were commonly termed Biscuit-root by the white Americans. The Canadian French call them *racine blanche*. The genus is marked by leaves pinnate in some species, finely dissected in others, sometimes stemless and never tall, and with small white or yellow flowers disposed in umbels like those of the carrot or parsley. Novices, however, should be warned that the Umbelliferae include several poisonous species, and the investigator should be well assured of the identity of his plant before experimenting with it.

Then there is Yamp, of this same family, and cousin to the caraway. It is the botanists' *Carum Gairdneri*, B. and H.—a slender, smooth herb, sometimes four feet high, with scanty pinnate leaves 3- to 7-parted and white flowers like the carrot's, growing usually on dry hillsides in mountainous country from British Columbia to Southern California and eastward to the Rockies. The clustered, spindle-shaped roots are about half an inch thick, and raw have an agreeable, nutty taste, with a considerable sugar content. Not only Indians but white settlers also have proved the nutritive value of this root, eating it either raw or cooked. In meadows and along stream borders in Central California a nearly related species (*Carum Kelloggii*, Gray) frequently

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occurs and goes among the whites by the name of Wild Anise.⁴ Its roots bear in greater or less abundance flattish tubers, which are serviceable in the same way as Yamp.

A more famous root of the Pacific Slope than Yamp is the Bitterroot (*Lewisia rediviva* Pursh), the *racine amère* of the French explorers, and found from Arizona north to Montana (where it has given name to the Bitterroot Mountains and Bitterroot River) and west to the Pacific. It is a member of the Portulaca family, with showy, many-petaled white or pink blossoms sometimes two inches across and opening in the sunshine close to the ground, in form like a spoked wheel. Montana has adopted it as her State flower. It is one of the marvels in the history of alimentation that the unappetizing roots of this plant, intensely bitter when raw and smelling like tobacco when boiling, should have secured a stable place in any human bill of fare. Nevertheless, by the Indians of the far Northwest it has been extensively consumed from time immemorial, and explorers' journals contain many references to ab-

4 Not to be confused with the mis-called Sweet Anise, which is really Fennel, the introduced *Foeniculum vulgare*. The latter is abundantly clothed with large, finely dissected leaves of a pronounced licorice flavor and has yellow flowers; while the Carum bears white flowers and its leaves are sparse and pinnate with simple segments.



BITTERROOT
(Lewisia rediviva)

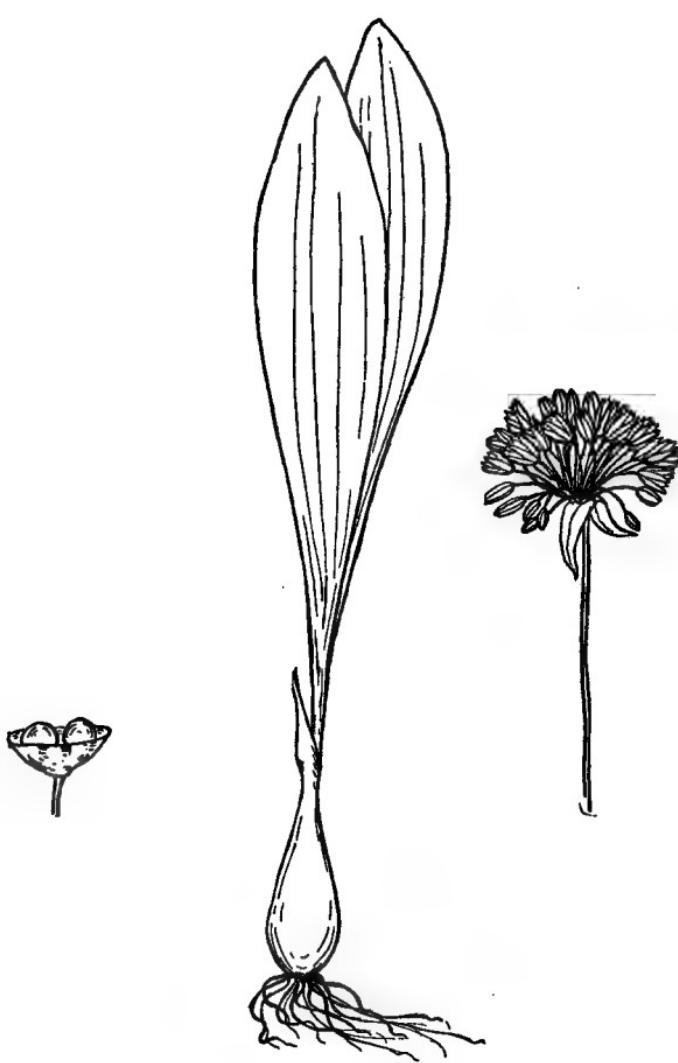
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original "spreads" put before them in which spat-lum, as the Oregon Indians called it, had a prominent place. Boiling has the effect of dissipating the bitterness; and the white heart of the root, which is starchy and mucilaginous, is certainly nutritious, though ideas as to its palatability differ. The Indian practice is to dig the roots in the spring, at which time the brownish bark slips off more easily than after the plant has flowered; and as the bitter principle is mainly resident in the bark, it is desirable to reject this before cooking. A noteworthy character of the root is its tenacity of life. Specimens that have been dipped in boiling water, dried and laid away in an herbarium for over a year, have been known to revive on being put in the ground again, to grow and to produce flowers. An Eastern cousin of the Bitterroot is the charming woodland flower of early spring called Spring Beauty (*Claytonia Virginica*, L.). It rises from a small, deep-seated, round tuber of starchy composition and nutty flavor, which might serve at a pinch to stave off starvation, and has indeed so served the aborigines.

CHAPTER II

WILD PLANTS WITH EDIBLE TUBERS, BULBS OR ROOTS (Continued)

It is a character of the Lily family that the plants are usually produced from subterranean bulbs or corms, and many such growing wild in the United States are of proved nutritiousness and palatability. Among these, for instance, are species of *Allium*, wild onion or leek, one of which particularly (*A. tricoccum*, Ait.) is recommended by those who have tried it for the sweetness and flavor of its young bulbs. It inhabits rich woodlands of the eastern Atlantic States north of South Carolina, its umbel of white flowers borne on naked stalks, appearing in June or July after its rather broad, odorous leaves have withered away. It is the Pacific Coast, however, that has a special fame for edible wild bulbs, many of which are known to the world at large only for the beauty of their flowers. There the Indians have, from before history began, been consuming such bulbs either raw or cooked. To some extent,



WILD LEEK
(Allium tricoccum)

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also, they have been drawn upon for food by white travelers and settlers-the most palatable species being of the genera *Calochortus*, *Brodiaea* and *Camassia*, and commonly called "Indian potatoes." The genus *Calochortus* furnishes the flower gardens of both hemispheres with the charming Mariposa Tulips, and few who enjoy their beauty realize the gastronomic possibilities of the homely, farinaceous corms out of which the lovely blossoms spring. The species most widely known as a food source is *Calochortus Nuttallii*, T.



SEGO LILY
(*Calochortus Nuttallii*)

and G., the Sego Lily, which has the distinction of being Utah's State flower. It may be recognized by its showy, tulip-shaped blossoms, whitish or lilac with a purple spot above the yellow heart of the

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flower, the leaves few and grass-like. It is indigenous to an extensive territory ranging from Dakota to Mexico and westward to the Pacific Coast. It was, I believe, a common article of diet among the first Mormons in Utah, under the name "Wild Sago," through a misunderstanding, perhaps, of the word "Sego," which is the Ute Indian term for this plant. A California species (*C. venustus*, Benth.) with white or lilac flowers variously tinged or blotched with red, yellow or brown, is also highly esteemed for its sweet corms. The cooking may be done by the simple process known to campers of roasting in hot ashes, or by steaming in pits, a method that will be described later on.

Brodiaea is a genus comprising numerous species, of which the so-called California Hyacinth, Grass-nut or Wild Onion (*B. capitata*, Benth.), common throughout the State, is perhaps the best known. Its clustered, pale blue flowers bunched at the tip of a slender stem are a familiar sight in grassy places in spring. The bulbs are about the size of marbles and noticeably mucilaginous. Eaten raw they seem rather flat at first, but the taste grows on one very quickly. They are also very good if boiled slowly for a half hour or so. The Harvest Brodiaea (*B.*

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grandiflora, Smith), with clusters of blue, funnel-shaped flowers like little blue lilies, is another familiar species common in fields and grassy glades from Central California northward to Washington. Its bulbs are best cooked, as by slow roasting in hot ashes, which develops the sweetness.

But the liliaceous bulb that has entered to the most important extent into the menus both of aborigines and white pioneers is the Camas or Quamash- "the queen root of this clime," as Father De Smet



WILD ONION
(*Brodiaea capitata*)

puts it in his "Oregon Missions." It is a handsome plant when in flower, which is in early

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summer. The 6-parted, usually blue blossoms, an inch or more across, occur in ample racemes at the top of stalks a foot or two high; the leaves all radical and grass-like. The bulb somewhat resembles a small onion, but is almost tasteless in the raw state. The range of the plant is from Idaho and Utah westward to central California, Oregon and Washington; and when undisturbed it grows so abundantly in open meadows and swampy lands as to convert them at a distance into the appearance of blue lakes of water. John K. Townsend, a Philadelphian who published an interesting narrative of a journey to the Rocky Mountains in 1839, has left us a pleasant, old-fashioned picture of a Camas feast in central Idaho. "In the afternoon," he writes, "we arrived at Kamas Prairie, so called from a vast abundance of this succulent root which it produces. The plain is a beautiful level one of about a mile over, hemmed in by low, rocky hills, and in spring the pretty blue flowers of the Kamas are said to give it a peculiar and very pleasing appearance. . . . We encamped here near a small branch of the Mallade River, and soon after all hands took their kettles and scattered over the prairie to dig a mess of Kamas. We were of course eminently successful, and were furnished with an excellent and wholesome meal. When boiled,

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this little root is palatable and somewhat resembles the taste of the common potato. The Indian method of preparing it, however, is the best."

This method, which embodies really the principle of our present day fireless cooker and has been employed by the aborigines from time immemorial for cooking numberless things, is briefly this : A hole of perhaps three feet in diameter and a foot or so in depth is dug in the ground and lined, bottom and sides, with flat stones. A fire of brushwood is then maintained in the hole until the stones are thoroughly heated through, when the embers are removed and fresh grass or green leaves (or, failing these, dampened dried grass) are spread upon the hot rocks and ashes. Upon this the bulbs are laid, covered with another layer of verdure or wet hay; and the whole is then topped with a mound of earth. In this air-tight oven the bulbs are left to steam for a day and a night, or even longer. The pit is then opened and the Camas will be found to be soft, dark brown in color, and sweet-almost chestnutty-in taste. The cooked mass, if pressed into cakes and then dried in the sun, may be preserved for future use.

There are several species of Camas, but the one best known is the botanist's *Camassia esculenta*,



CAMAS
(Camassia esculenta)

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Lindl., the plant of the preceding paragraphs. A closely allied species is *Camassia Leichtlinii* (Baker) Cov., common in northern California and Oregon. White settlers, in the days before their orchards and gardens were established, found in Camas a welcome addition to their meager and monotonous bill of fare, and Camas pie was a not uncommon dish in many an old time Oregon or California household.

Related to the Lily tribe is the Sedge family, of which two or three species are utilizable for human food. One of these is a bulrush of wide occurrence in the United States (*Scirpus lacustris*, L.), the Far Western form of which is commonly known as Tule. Its tuberous roots are starchy and may be ground, after drying, into a white, nutritious flour. They may also be chewed to advantage by travelers in arid regions as a preventive of thirst. Of more worth, however, are two species of *Cyperus*—*C. rotundus*, L., and *C. esculentus*, L. The former, commonly known as Nut-grass, is a denizen of fields in the Southern Atlantic States; the latter, popularly called Chufa, is abundant in moist fields on both our seaboards. Both, also, are widely distributed in the Old World. Like all of their genus, they are distinguished by triangular stems, naked except for a few grass-like leaves at the base, and bear-



CHUFA
(Cyperus esculentus)

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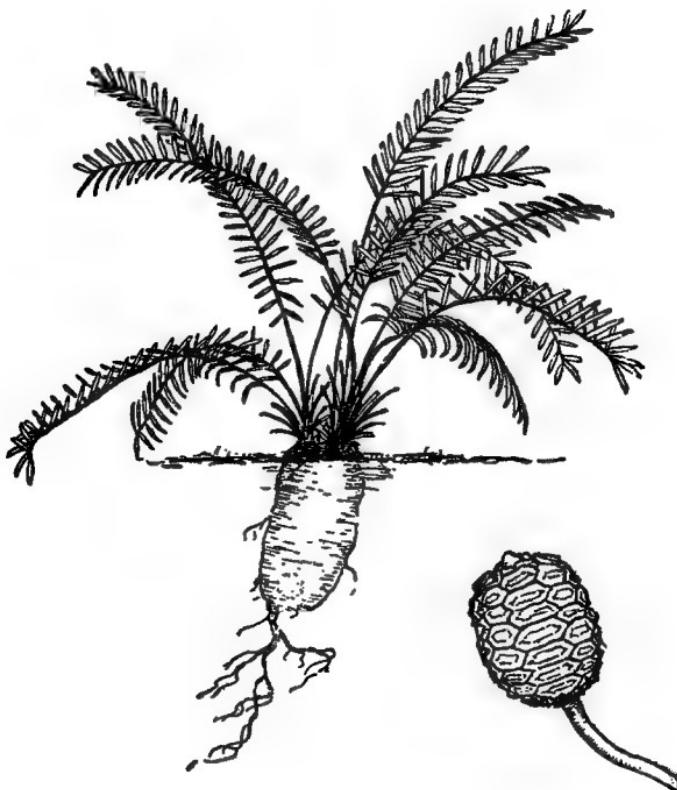
ing at the summit of the stem an umbel of inconspicuous, purplish-green florets. The dietetic interest in them centers in the rootstocks, which bear small tubers of a pleasant, nutty flavor, and both white men and Indians have approved them, as well as the white men's pigs. The Chufa's hard tubers, especially, are sweet and tasty, and in some parts of the South have been considered worthy of cultivation, though by reason of rapid increase and difficulty to eradicate, the plant has a tendency to become a bad weed. We get the name Chufa from Spain, where the tubers are used in emulsion as a refreshment in the same class with "almonds in the milk, pasties, strawberries, azaroles, sugar icing and sherbets," according to some lines of a Spanish poem I ran across the other day.¹

Of quite restricted occurrence in the United States, but worthy of mention because of its importance, is a member of a peculiar natural order of plants called Cycads. They resemble the palms in some respects and in others the ferns, their leaves, for instance, having a fashion of unrolling from base to apex in the manner of fern croziers. Many species inhabit tropical America, and two reach the southern

1 "Almendrukos y pasteles,
Chufas, fresas y acerolas,
Garapiñas y sorbetes."

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tip of our country, being indigenous to the Florida peninsula. One, known to botanists as *Zamia pumila*, L., occurs in dense, damp woods of central



FLORIDA ARROWROOT
(*Zamia* sp.)

Florida: the other, *Z. Floridana*, DC., is a wilding of the open, dry, pine region of the east coast of southern Florida. They are popularly called Coontie or Coontah, the Indian name. The stiff, fern-

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like foliage arises in a clump from the crown (at the ground level) of a thick, subterranean stem which is exceedingly rich in starch. A nutritious flour made from the stem-and root-content of *Zamia* has had some vogue in the shops under the name of Florida Arrowroot. It has long been a staple article of diet with the Seminole Indians, and the plant has even found its way into the literature of juvenile adventure, as readers of boy romances may recall.

Similar in name to Coontie—indeed, probably the same name applied to a different food—is Conte or Contee, mentioned by William Bartram² as served to him by the Seminoles, and prepared from the starchy, tuberous roots of the China-brier (*Smilax Pseudo-China*, L.). This dish was made by chopping up the root, pounding the pieces thoroughly in a mortar, then mixing with water and straining through a sort of basket filter. The sediment was dried and appeared as a fine, reddish meal. A small quantity of this mixed with warm water and honey, says Bartram, “when cool, becomes a beautiful, delicious jelly, very nourishing and wholesome. They also mix it with fine corn flour, which, being fried in fresh bear’s grease, makes very good hot

2 “Travels through North and South Carolina, Georgia, East and West Florida, etc.,” 1773, Chap. VII.



CONTE
(*Smilax Pseudo-China*)

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cakes or fritters." So, you see, the wilderness as well as the town had its gastronomic delicacies, and dallied with dyspepsia. The China-brier, sometimes called Bull-brier, is a perennial woody vine of dry thickets from Maryland to the Gulf of Mexico, adorned in autumn with showy umbels of black berries not known to be edible. The whites have used the knotty, tuberous roots as the basis of a home-made rootbeer in association with molasses and parched corn.

Our waters, too, yield some native roots of economic worth. Among these aquatic wildlings perhaps the commonest is the Arrowhead (*Sagittaria variabilis* Eng.), so called from the shape of its leaves. It is found in swamps, ditches, ponds and shallow waters very generally throughout North America from the Atlantic to the Pacific and from Canada to Mexico, flowering in summer with 3-petaled white blossoms arranged in verticels of three. All Indians, whether of the Atlantic Slope, the Middle West or the Pacific Coast, have set great store by the plant because of its starchy, white tubers, somewhat resembling small potatoes, developed in autumn at the ends of the rootstocks. It is nearly related to a cultivated vegetable of the Chinese—*Sagittaria Sinensis* a native of Asia.



ARROWHEAD
(*Sagittaria variabilis*)

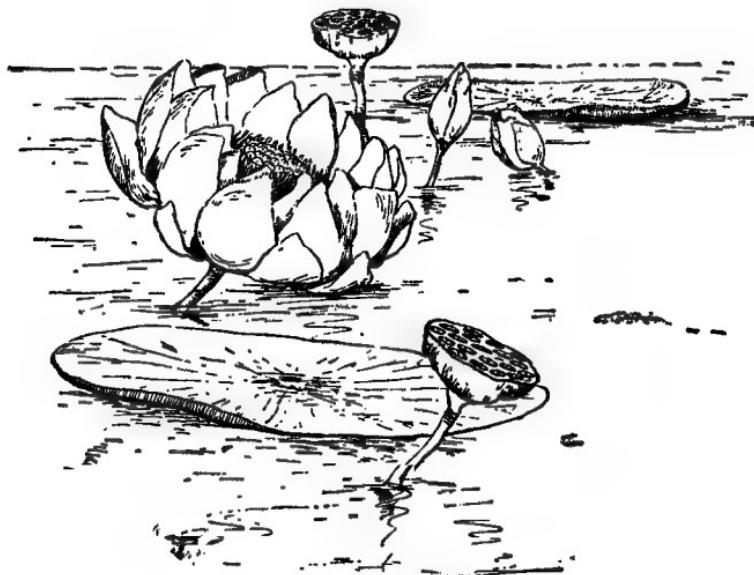
EDIBLE TUBERS, BULBS OR ROOTS

Lewis and Clarke, in their narrative, speak of an island in the Columbia River, which they call Wappatoo Island, because of the numerous ponds in its interior abounding in the Arrowhead plant, which in the Indian language is termed Wappatoo. Those doughty explorers have given a picturesque description of the aboriginal Arrowhead business in the Columbia River country of Oregon as it was a century ago. "The bulb," to quote from their Narrative, "is a great article of food and almost the staple of commerce on the Columbia. . . . It is collected by the women, who employ for the purpose canoes . . . sufficient to contain a single person and several bushels of roots, yet so very light a woman can carry them with ease. She takes one of these canoes into a pond where the water is as high as the breast, and by means of her toes separates from the root the bulb which on being freed from the mud rises immediately to the surface of the water and is thrown into the canoe." Roasted or boiled, the tubers become soft, palatable and digestible, and to travelers in the wild make a fairly good substitute for bread.

Also as bread upon the waters is that majestic aquatic native to quiet streams and ponds of the interior United States from the Great Lakes to the

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Gulf, the American Lotus or Water Chinquapin (*Nelumbo lutea*, Pers.). It is easily recognized by its huge, round leaves (sometimes two feet across and a favorite sunning place, by the way, for water snakes) lifted high above the water on foot-



WATER CHINQUAPIN
(*Nelumbo lutea*)

stalks attached to the center of the concave leaf, and its showy, pale yellow, papery flowers of numerous petals curving upward to be succeeded by curious, flat-topped, pitted seed-vessels. It is an American cousin of the famous lotus of India and oriental romance. To the American Indian, however, it seems

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never to have appealed as a flower of contemplation, but quite prosaically as an addition—and an important one—to his dinner table. In this role he found it trebly useful: first, because of the young leaves and footstalks which may be turned to account in the same way as spinach; secondly, because of the ripened seeds which, roasted or boiled, are palatable and nutritious with a taste that has given rise to the popular name Water Chinquapin; and thirdly, because of the large tubers, weighing sometimes half a pound each, which, when baked, are sweet and mealy with a flavor somewhat like a sweet potato. This is the plant whose flower is rather exuberantly referred to by Longfellow in “*Evangeline*”:

“Resplendent in beauty, the lotus
Lifted her golden crown above the heads of the boatmen.”

Though the customary habitat of this *Nelumbo* is the Mississippi basin, some isolated stations for it are known near the north Atlantic coast, notably in the Connecticut and Delaware Valleys, suggesting the view that it may have been introduced into such localities and cultivated by the Indian inhabitants. However the fact may be, its value as a food source is such as would have warranted such introduction

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The aroids-a plant family abundant in the tropics and of which several species, as the taro of the Pacific, possess nutritious, starchy, tuberous roots of importance as human foods-are represented in the United States by two or three plants of proved value. One of these is the Golden Club (*Orontium aquaticum*, L.), whose flower spikes of a rich, bright yellow, lifted above velvety, green, strap-like leaves from which water rolls as from a duck's back, are a familiar sight in the spring in ponds and marshes along the Atlantic coast. The bulbous rootstock, when cooked, is possessed of considerable nutriment, but owing to its deep seat in the muck is difficult of extraction. The ripened seeds, which resemble peas, are more easily gathered, and both whites and Indians have included them in their diet. According to Peter Kalm, an observant and inquisitive Swede whose book of travels in the North American Colonies in 1748 is still an interesting narrative to any who enjoy a look into the vanished past, the dried seeds, not the fresh, should be used, and they must be boiled and re-boiled repeatedly before they are fit to eat; yet his Swedish acquaintances thought it worth their while to do so.

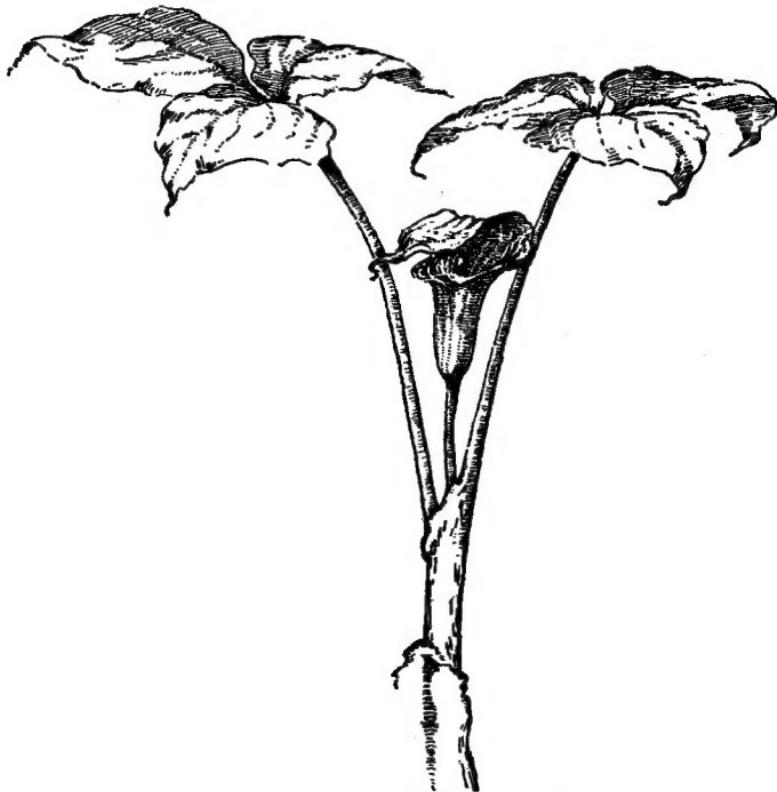
Of even greater interest is another aroid, the Arrow Arum or Virginia Tuckaho (*Peltandra Vir-*

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ginica, [L] Kunth, and perhaps the nearly related species *P. alba* Raf., of the Southern States, a plant with large, arrow-shaped leaves and inconspicuous flowers enveloped in a green spathe. *Peltandra Virginica* is common in shallow waters of the Atlantic seaboard from Canada, to Florida. I have never dug up the rootstock, about which I find the recorded descriptions differ. Havard, in his "Food Plants of the North American Indians," describes it, doubtless rightly, as short, deep-seated, sometimes six inches in diameter and weighing five or six pounds. As in the case of all aroids, the raw flesh of the rootstock is exceedingly acrid, indeed poisonous; but when dried and thoroughly cooked, it is found to have lost this objectionable principle, and in this state is a starchy food of proved nutrition. I think it is this plant that is meant in Purchas's Pilgrimage, where in the delicious English of the day record is made of the Virginians' "Tockawhough . . . of the greatness and taste of a potato, which passeth a fiery purgation before they may eate it, being poison whiles it is raw." The approved treatment appears to have been to steam it in the aboriginal heated pit, covered over with earth and left undisturbed for a day or two. Similarly the familiar Jack-in-the-Pulpit (*Arisaema triphyllum*, Torr.), whose small,

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turnip-shaped corm, bitten into raw, stings the tongue like red hot needles, becomes thoroughly tamed when dried and cooked, and its starchy con-



JACK-IN-THE-PULPIT
(*Arisaema triphyllum*)

tent was once a source of bread to the Seneca Indians.

The name Tuckaho has also been applied to a sub-

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terranean fungus (*Pachyma Cocos*, Fries), often found attached to old tree roots in the Southern States. It resembles roughly a cocoanut, though sometimes of more irregular shape. Inside the brown rind is a firm, white meat, which would be quite insipid, except for a trace of sweetness that is present. Its most common name is Indian Bread, because of the Indian use of it as a food. It is devoid of starch and seems of questionable nutritive value. Another subterranean parasite, though not a fungus, that is of genuine worth as an edible, is the curious Sand Food (*Ammobroma Sonorae*, Torr.), abundant in sandhills of southern Arizona and across the Mexican line in the dunes bordering on the Gulf of California,, where it is called *camote de los médanos*. It consists underground of a slender, fleshy, leafless but scaly stem, two to three feet long, while above the sand during the flowering season in the spring is a small, funnel-like top on which. the tiny, purple blossoms appear. After flowering, the overground part withers and disappears, and the plant presents no sign of its existence except to the experts who know where to dig. The subterranean stem is tender, juicy and sweet-a refreshing and luscious morsel, meat and drink in one. It may be eaten either raw or roasted, and is relished by red-

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men and white alike. Mr. Carl Lumholtz in his interesting book "New Trails in Mexico" tells of an Indian who lived almost entirely on Ammobroma, being able to find it out of season-a remarkable testimony to the nutritiousness of the plant and the abstemiousness of the Indian !

The creeping rootstocks of the common Cat-tail (*Typha latifolia*, L.) which covers great areas of our swamp lands throughout the United States, hold a nutritious secret, too, for they contain a core of almost solid starch. They were dug and dried in former times by Indians, who ground them into a meal. A recent analysis of such meal by one of the Government chemists showed it to contain about the same amount of protein as is in rice- and corn-flours, but less fat. It may make a useful mixture with the ordinary flours, and be substituted for corn-starch in puddings, as it seems entirely palatable.